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**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**RIN 0648-XD857**

**Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Wharf Maintenance Project**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; issuance of an incidental harassment authorization.

**SUMMARY:** In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the U.S. Navy (Navy) to incidentally harass, by Level B harassment only, five species of marine mammals during construction activities as part of a wharf maintenance project conducted in the Hood Canal, Washington.

**DATES:** This IHA is effective from July 16, 2015, through January 15, 2016.

**FOR FURTHER INFORMATION CONTACT:** Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

**SUPPLEMENTARY INFORMATION:**

**Availability**

An electronic copy of the Navy's application and supporting documents, as well as a list of the references cited in this document, may be obtained by visiting the Internet at:

[www.nmfs.noaa.gov/pr/permits/incidental/construction.htm](http://www.nmfs.noaa.gov/pr/permits/incidental/construction.htm). In case of problems accessing these

documents, please call the contact listed above (see **FOR FURTHER INFORMATION CONTACT**).

## **Background**

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified area, the incidental, but not intentional, taking of small numbers of marine mammals, providing that certain findings are made and the necessary prescriptions are established.

The incidental taking of small numbers of marine mammals may be allowed only if NMFS (through authority delegated by the Secretary) finds that the total taking by the specified activity during the specified time period will (i) have a negligible impact on the species or stock(s) and (ii) not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). Further, the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking must be set forth.

The allowance of such incidental taking under section 101(a)(5)(A), by harassment, serious injury, death, or a combination thereof, requires that regulations be established. Subsequently, a Letter of Authorization may be issued pursuant to the prescriptions established in such regulations, providing that the level of taking will be consistent with the findings made for the total taking allowable under the specific regulations. Under section 101(a)(5)(D), NMFS may authorize such incidental taking by harassment only, for periods of not more than one year, pursuant to requirements and conditions contained within an IHA. The establishment of these prescriptions requires notice and opportunity for public comment.

NMFS has defined “negligible impact” in 50 CFR 216.103 as “...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.” Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as: “...any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

### **Summary of Request**

On November 4, 2014, we received a request from the Navy for authorization to take marine mammals incidental to pile driving and removal associated with maintenance of an explosives handling wharf (EHW-1) in the Hood Canal at Naval Base Kitsap in Bangor, WA (NBKB). The Navy submitted revised versions of the request on February 27 and March 17, 2015. The latter of these was deemed adequate and complete. The Navy plans to replace four structurally unsound piles, between July 16, 2015, and January 15, 2016.

The use of both vibratory and impact pile driving is expected to produce underwater sound at levels that have the potential to result in behavioral harassment of marine mammals. Species with the expected potential to be present during all or a portion of the in-water work window include the Steller sea lion (*Eumetopias jubatus monteriensis*), California sea lion (*Zalophus californianus*), harbor seal (*Phoca vitulina richardii*), killer whale (transient only; *Orcinus orca*), and harbor porpoise (*Phocoena phocoena vomerina*). These species may occur year-round in the Hood Canal, with the exception of the Steller sea lion, which is present only

from fall to late spring (approximately late September to early May), and the California sea lion, which is only present from late summer to late spring (approximately late August to early June).

This is the third such IHA for similar work on the same structure. The Navy previously received IHAs for a two-year maintenance project at EHW-1 conducted in 2011-12 and 2012-13 (76 FR 30130 and 77 FR 43049). Additional IHAs were issued to the Navy in recent years for marine construction projects on the NBKB waterfront, including the construction of a second explosives handling wharf (EHW-2) immediately adjacent to EHW-1. Three consecutive IHAs were issued for that project, in 2012-13 (77 FR 42279), 2013-14 (78 FR 43148), and 2014-15 (79 FR 43429). Additional projects include the Test Pile Project (TPP), conducted in 2011-12 in the proposed footprint of the EHW-2 to collect geotechnical data and test methodology in advance of the project (76 FR 38361) and a minor project to install a new mooring for an existing research barge, conducted in 2013-14 (78 FR 43165). In-water work associated with all projects was conducted only during the approved in-water work window (July 16-February 15). Monitoring reports for all of these projects are available on the Internet at [www.nmfs.noaa.gov/pr/permits/incidental/construction.htm](http://www.nmfs.noaa.gov/pr/permits/incidental/construction.htm) and provide environmental information related to issuance of this IHA.

### **Description of the Specified Activity**

Additional detail regarding the specified activity was provided in our **Federal Register** notice of proposed authorization (80 FR 22477; April 22, 2015); please see that document or Navy's application for more information.

#### *Overview*

NBKB provides berthing and support services to Navy submarines and other fleet assets. The Navy plans to complete necessary maintenance at the EHW-1 facility at NBKB as part of

ongoing maintenance conducted as necessary to maintain the structural integrity of the wharf and ensure its continued functionality to support necessary operational requirements. The EHW-1 facility, constructed in 1977, requires ongoing maintenance due to the deterioration of the wharf's existing piling sub-structure. The planned action includes the replacement of four existing 24-in hollow pre-stressed octagonal concrete piles with four new 30-in concrete filled steel pipe piles. Existing piles will be removed using a pneumatic hammer and a crane. Vibratory pile driving will be the primary method used to install new piles, though an impact hammer may be used if substrate conditions prevent the advancement of piles to the required depth or to verify the load-bearing capacity. Sound attenuation measures (i.e., bubble curtain) would be used during all impact hammer operations.

#### *Dates and Duration*

The Navy's specified activity will occur only during July 16 through January 15, within the allowable season for in-water work at NBKB. This window is established by the Washington Department of Fish and Wildlife in coordination with NMFS and the U.S. Fish and Wildlife Service (USFWS) to protect juvenile salmon. A maximum of eight pile driving days will occur, but the eight days could occur at any time during the window. Vibratory driving, as compared with impact driving or pile removal via pneumatic chipping, is expected to occur on only four total days.

Impact pile driving during the first half of the in-water work window (July 16 to September 23) may only occur between two hours after sunrise and two hours before sunset to protect breeding marbled murrelets (*Brachyramphus marmoratus*; an Endangered Species Act [ESA]-listed bird under the jurisdiction of USFWS). Vibratory driving during the first half of the window, and all in-water work conducted between September 23 and January 15, may occur

during daylight hours (sunrise to sunset). Other construction (not in-water) may occur between 7 a.m. and 10 p.m., year-round. Therefore, in-water work is restricted to daylight hours (at minimum) and there is at least a nine-hour break during the 24-hour cycle from all construction activity.

### *Specific Geographic Region*

NBKB is located on the Hood Canal approximately 32 km west of Seattle, Washington (see Figures 2-1 through 2-3 in the Navy's application). The Hood Canal is a long, narrow fjord-like basin of the western Puget Sound. Throughout its 108-km length, the width of the canal varies from 1.6-3.2 km and exhibits strong depth/elevation gradients and irregular seafloor topography in many areas. Although no official boundaries exist along the waterway, the northeastern section extending from the mouth of the canal at Admiralty Inlet to the southern tip of Toandos Peninsula is referred to as northern Hood Canal. NBKB is located within this region. Please see Section 2 of the Navy's application for detailed information about the specific geographic region, including physical and oceanographic characteristics.

### *Detailed Description of Activities*

Maintenance of necessary facilities for handling of explosive materials is part of the Navy's sea-based strategic deterrence mission, and the Navy has determined that EHW-1 structural integrity is compromised due to deterioration of the wharf's piling sub-structure. The EHW-1 consists of two 30-m access trestles and a main pier deck that measures approximately 215 m in length. The wharf is supported by both 16-in and 24-in hollow octagonal pre-cast concrete piles. Additionally, there are steel and timber fender piles on the outboard and inboard edges of the wharf (see Figures 1-1 through 1-4 in the Navy's application).

The Navy plans to replace four structurally unsound 24-in hollow prestressed octagonal concrete piles, as well as performing additional repair and replacement work above water that would not be expected to result in effects to marine mammals. The piles will be replaced with four 30-in concrete filled steel piles. Piles to be removed will first be scored by a diver using a small pneumatic hammer and then removed by crane. Pile installation will utilize vibratory pile drivers to the greatest extent possible, and the Navy anticipates that most piles will be able to be vibratory driven to within several feet of the required depth. Pile drivability is, to a large degree, a function of soil conditions and the type of pile hammer. The soil conditions encountered during geotechnical explorations at NBKB indicate existing conditions generally consist of fill or sediment of very dense glacially overridden soils, and recent experience at other construction locations along the NBKB waterfront indicates that most piles should be able to be driven with a vibratory hammer to proper embedment depth. However, difficulties during pile driving may be encountered as a result of obstructions, such as rocks or boulders, which may exist throughout the project area. If difficult driving conditions occur, usage of an impact hammer will occur. Impact driving may also be used to verify load-bearing capacity, or proof, installed piles.

### **Comments and Responses**

We published a notice of receipt of Navy's application and proposed IHA in the **Federal Register** on April 22, 2015 (80 FR 22477). During the thirty-day comment period, we received a letter from the Marine Mammal Commission (Commission). The comments and our responses are provided here, and the comments have been posted on the Internet at:

*[www.nmfs.noaa.gov/pr/permits/incidental/construction.htm](http://www.nmfs.noaa.gov/pr/permits/incidental/construction.htm)*. Please see the comment letters for full rationale behind the recommendations we respond to below.

*Comment 1:* The Commission recommends that we require the Navy to use the relevant ensonified areas associated with EHW-1 activities and the unadjusted harbor seal density estimate of 9.92 rather than 7.93 seals/km<sup>2</sup> to estimate the number of seals that could be taken during those activities.

*Response:* We addressed the Commission's concern, which was previously known to us, in detail on pages 22496-22497 of our notice of proposed authorization (80 FR 22477; April 22, 2015). While the Commission makes several valid points, we disagree with the recommendation in relation to the specific context of this project. As we do with all applicants and for all proposed authorizations, we will consider all available information and the most appropriate use of that information in the context of the specified activity and in light of the Commission's position on this issue prior to proposing any future authorizations related to Navy activity in the Hood Canal.

*Comment 2:* The Commission recommends that we require the Navy to use vessel-based observers to monitor the full extent of the Level B harassment zones, including areas beyond the port security barrier and waterfront restricted area (WRA), for impact and vibratory pile driving and pile removal to (1) determine the numbers of marine mammals taken and total number of takes during those activities and (2) characterize the effects on those mammals, including cetaceans.

*Response:* The Commission states that the proposed visual monitoring plan is insufficient because a significant portion of the Level B harassment zone resulting from vibratory pile driving cannot be observed from the shore-based positions reasonably available to the Navy. Expanding visual coverage of the 120-dB root mean square (rms) harassment zone (estimated at 41.6 km<sup>2</sup>) would require deployment of small vessels beyond the WRA, because no



viable access exists to get observers onto the far shoreline and because the beach area is lost at high tide. NBKB is a nuclear weapons-handling facility with strict security protocols regarding entrance or exit from the WRA that would make deployment of small vessels impracticable for such a small-scale project (maximum of eight days). There is no available facility for housing such vessels outside NBKB.

We routinely deal with actions involving very large Level B harassment zones and typically require, at most, only limited monitoring of the further reaches of such zones due to practicability concerns. Monitoring of farther reaches of such zones during a subset of activity is typically an acceptable way to understand marine mammal occurrence in the action area such that extent of incidental take may be estimated. In anticipation of the particular situation at NBKB, i.e., poor ability to readily deploy vessel-based monitors outside the WRA, we worked with Navy to develop a strong monitoring effort (including dedicated vessel-based line-transect surveys in the absence of noise-producing activity) in 2011 that was intended to inform knowledge of the occurrence of marine mammals in the far-field for multiple years of work. In context of this specified activity, we do not believe that further such effort is commensurate with the level of activity proposed and have determined it to be impracticable. Prior to proposing any future authorizations related to Navy activity in the Hood Canal, we will consider whether additional monitoring requirements are warranted.

*Comment 3:* The Commission recommends that we require the Navy to use better methods to estimate the numbers of marine mammals taken and the total numbers of takes during EHW-1 activities rather than the extrapolation method recently used for other waterfront activities.

*Response:* We agree with the Commission’s recommendation and will consider methodological improvements in concert with the Navy and the Commission.

### **Description of Marine Mammals in the Area of the Specified Activity**

The marine mammal species that may be harassed incidental to the specified activity are the harbor seal, California sea lion, Steller sea lion, harbor porpoise, and transient killer whales. We presented a detailed discussion of the status of these stocks and their occurrence in the action area in the notice of the proposed IHA (80 FR 22477; April 22, 2015).

Table 1 lists the marine mammal species with expected potential for occurrence in the vicinity of NBKB during the project timeframe and summarizes key information regarding stock status and abundance. Taxonomically, we follow Committee on Taxonomy (2014). Please see NMFS’ Stock Assessment Reports (SAR), available at [www.nmfs.noaa.gov/pr/sars](http://www.nmfs.noaa.gov/pr/sars), for more detailed accounts of these stocks’ status and abundance. The harbor seal, California sea lion and harbor porpoise are addressed in the Pacific SARs (e.g., Carretta *et al.*, 2014, 2015), while the Steller sea lion and transient killer whale are treated in the Alaska SARs (e.g., Allen and Angliss, 2014, 2015).

**Table 1. Marine mammals potentially present in the vicinity of NBKB**

Species	Stock	ESA/MMPA status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR <sup>3</sup>	Annual M/SI <sup>4</sup>	Relative occurrence in Hood Canal; season of occurrence
Order Cetartiodactyla – Cetacea – Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	West coast transient <sup>6</sup>	-; N	243 (n/a; 2009)	2.4	0	Rare; year-round (but last observed in 2005)
Family Phocoenidae (porpoises)						
Harbor porpoise	Washington inland waters <sup>7</sup>	-; N	10,682 (0.38; 7,841; 2003)	unk	≥2.2	Possible regular presence; year-round
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						

California sea lion	U.S.	-; N	296,750 (n/a; 153,337; 2011)	9,200	389	Seasonal/common; Fall to late spring (Aug to Jun)
Steller sea lion	Eastern U.S. <sup>5</sup>	-; N	60,131-74,448 (n/a; 36,551; 2008-13) <sup>8</sup>	1,645 <sup>9</sup>	92.3	Seasonal/occasional; Fall to late spring (Sep to May)
Family Phocidae (earless seals)						
Harbor seal	Hood Canal <sup>7</sup>	-; N	3,555 (0.15; unk; 1999)	unk	0.2	Common; Year-round resident

<sup>1</sup>ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR (see footnote 3) or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>2</sup>CV is coefficient of variation;  $N_{min}$  is the minimum estimate of stock abundance. In some cases, CV is not applicable. For killer whales, the abundance values represent direct counts of individually identifiable animals; therefore there is only a single abundance estimate with no associated CV. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species (or similar species) life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore.

<sup>3</sup>Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP).

<sup>4</sup>These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value. All values presented here are from the draft 2014 SARs ([www.nmfs.noaa.gov/pr/sars/draft.htm](http://www.nmfs.noaa.gov/pr/sars/draft.htm)).

<sup>5</sup>Abundance estimates (and resulting PBR values) for these stocks are new values presented in the draft 2014 SARs. This information was made available for public comment and is currently under review and therefore may be revised prior to finalizing the 2014 SARs. However, we consider this information to be the best available for use in this document.

<sup>6</sup>The abundance estimate for this stock includes only animals from the "inner coast" population occurring in inside waters of southeastern Alaska, British Columbia, and Washington – excluding animals from the "outer coast" subpopulation, including animals from California – and therefore should be considered a minimum count. For comparison, the previous abundance estimate for this stock, including counts of animals from California that are now considered outdated, was 354.

<sup>7</sup>Abundance estimates for these stocks are greater than eight years old and are therefore not considered current. PBR is considered undetermined for these stocks, as there is no current minimum abundance estimate for use in calculation. We nevertheless present the most recent abundance estimates, as these represent the best available information for use in this document.

<sup>8</sup>Best abundance is calculated as the product of pup counts and a factor based on the birth rate, sex and age structure, and growth rate of the population. A range is presented because the extrapolation factor varies depending on the vital rate parameter resulting in the growth rate (i.e., high fecundity or low juvenile mortality).

<sup>9</sup>PBR is calculated for the U.S. portion of the stock only (excluding animals in British Columbia) and assumes that the stock is not within its OSP. If we assume that the stock is within its OSP, PBR for the U.S. portion increases to 2,193.

## Potential Effects of the Specified Activity on Marine Mammals and their Habitat

We provided a detailed discussion of the potential effects of the specified activity on marine mammals and their habitat in the notice of the proposed IHA (80 FR 22477; April 22, 2015). Please see that document for more information.

## **Mitigation**

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. Please see our notice of the proposed IHA (80 FR 22477; April 22, 2015) for a more detailed description of the planned mitigation.

Measurements from similar pile driving events, including from previously monitored construction activity on the NBKB waterfront, were coupled with practical spreading loss to estimate zones of influence. These values were then used to develop mitigation measures for EHW-1 pile driving activities. In addition to the measures described later in this section, the Navy will employ the following standard mitigation measures:

(a) Conduct briefings between construction supervisors and crews, marine mammal monitoring team, and Navy staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

(b) For in-water heavy machinery work other than pile driving (using, e.g., standard barges, tug boats, barge-mounted excavators, or clamshell equipment used to place or remove material), if a marine mammal comes within 10 m, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions.

This type of work could include the following activities: (1) movement of the barge to the pile location; (2) positioning of the pile on the substrate via a crane (i.e., stabbing the pile); (3) removal of the pile from the water column/substrate via a crane (i.e., deadpull); or (4) the placement of sound attenuation devices around the piles. For these activities, monitoring will take place from 15 minutes prior to initiation until the action is complete.

#### *Monitoring and Shutdown for Pile Driving*

The following measures will apply to the Navy's mitigation through shutdown and disturbance zones:

*Shutdown Zone* – For all pile driving activities, the Navy will establish a shutdown zone intended to contain the area in which SPLs equal or exceed the 180/190 dB rms acoustic injury criteria. Modeled distances for shutdown zones are shown in Table 2. The Navy will implement a minimum shutdown zone of 29 m radius for cetaceans and 10 m radius for pinnipeds around all pile driving activity. However, no cetaceans have been observed within the floating port security barrier, which is approximately 500 m from the wharf.

*Disturbance Zone* – Disturbance zones are the areas in which SPLs equal or exceed 160 and 120 dB rms (for pulsed and non-pulsed continuous sound, respectively). Nominal radial distances for disturbance zones are shown in Table 2. Given the size of the disturbance zone for vibratory pile driving, it is impossible to guarantee that all animals would be observed or to make comprehensive observations of fine-scale behavioral reactions to sound, and only a portion of the zone (e.g., what may be reasonably observed by visual observers stationed within the WRA) will be monitored. In order to document observed incidents of harassment, monitors record all marine mammal observations, regardless of location.

*Monitoring Protocols* – Monitoring will be conducted before, during, and after pile driving activities. In addition, observers will record all incidents of marine mammal occurrence, regardless of distance from activity, and will document any behavioral reactions in concert with distance from piles being driven. Observations made outside the shutdown zone will not result in shutdown; that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities would be halted. Monitoring will take place from fifteen minutes prior to initiation through thirty minutes post-completion of pile driving activities. Pile driving activities include the time to remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes. Please see the Marine Mammal Monitoring Plan (available at [www.nmfs.noaa.gov/pr/permits/incidental/](http://www.nmfs.noaa.gov/pr/permits/incidental/) and as Appendix C of the Navy's application), developed by the Navy with our approval, for full details of the monitoring protocols.

The following additional measures apply to visual monitoring:

(1) Monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Advanced education in biological science or related field (undergraduate degree or higher required);

- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(2) Prior to the start of pile driving activity, the shutdown zone will be monitored for fifteen minutes to ensure that it is clear of marine mammals. Pile driving will only commence once observers have declared the shutdown zone clear of marine mammals; animals will be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior will be monitored and documented. The shutdown zone may only be declared clear, and pile driving started, when the entire shutdown zone is visible (i.e., when not obscured by dark, rain, fog, etc.). In addition, if such conditions should arise during impact pile driving that is already underway, the activity would be halted.

(3) If a marine mammal approaches or enters the shutdown zone during the course of pile driving operations, activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or fifteen minutes have passed without re-detection of the animal. Monitoring will be conducted throughout the time required to drive a pile.

#### *Sound Attenuation Devices*

Bubble curtains will be used during all impact pile driving. The device must distribute air bubbles around one hundred percent of the piling perimeter for the full depth of the water column, and the lowest bubble ring must be in contact with the mudline for the full circumference of the ring. In order to avoid loss of attenuation from design and implementation errors in the absence of such testing, a performance test of the device must be conducted prior to initial use. The performance test will confirm the calculated pressures and flow rates at each manifold ring. In addition, the contractor must train personnel in the proper balancing of air flow to the bubblers and must submit an inspection/performance report to the Navy within 72 hours following the performance test.

#### *Timing Restrictions*

In Hood Canal, designated timing restrictions exist for pile driving activities to avoid in-water work when juvenile salmonids are likely to be present. The in-water work window is July 16-January 15. Until September 23, impact pile driving will only occur starting two hours after sunrise and ending two hours before sunset due to marbled murrelet nesting season. After September 23, in-water construction activities will occur during daylight hours (sunrise to sunset).

#### *Soft Start*



Soft start will be required for impact and vibratory pile driving. For impact driving, contractors will provide an initial set of strikes from the impact hammer at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets. Soft start for impact driving will be required at the beginning of each day's pile driving work and at any time following a cessation of impact pile driving of thirty minutes or longer. Vibratory soft start involves a requirement to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a thirty-second waiting period. This procedure is repeated two additional times. However, if a variable moment hammer proves infeasible for use with this project, or if unsafe working conditions during soft starts are reported by the contractor and verified by an independent safety inspection, the Navy may discontinue use of the vibratory soft start measure.

We have carefully evaluated the Navy's planned mitigation measures and considered their effectiveness in past implementation to determine whether they are likely to effect the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals, (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any mitigation measure(s) we prescribe should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

(1) Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).

(2) A reduction in the number (total number or number at biologically important time or location) of individual marine mammals exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only).

(3) A reduction in the number (total number or number at biologically important time or location) of times any individual marine mammal would be exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only).

(4) A reduction in the intensity of exposure to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing the severity of behavioral harassment only).

(5) Avoidance or minimization of adverse effects to marine mammal habitat, paying particular attention to the prey base, blockage or limitation of passage to or from biologically important areas, permanent destruction of habitat, or temporary disturbance of habitat during a biologically important time.

(6) For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the Navy's planned measures, including information from monitoring of the Navy's implementation of the mitigation measures as prescribed under previous IHAs for this and other projects in the Hood Canal, we have determined that the planned mitigation measures provide the means of effecting the least practicable impact on

marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **Monitoring and Reporting**

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth “requirements pertaining to the monitoring and reporting of such taking”. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for incidental take authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area.

Any monitoring requirement we prescribe should accomplish one or more of the following general goals:

1. An increase in the probability of detecting marine mammals, both within defined zones of effect (thus allowing for more effective implementation of the mitigation) and in general to generate more data to contribute to the analyses mentioned below;
2. An increase in our understanding of how many marine mammals are likely to be exposed to stimuli that we associate with specific adverse effects, such as behavioral harassment or hearing threshold shifts;
3. An increase in our understanding of how marine mammals respond to stimuli expected to result in incidental take and how anticipated adverse effects on individuals may impact the population, stock, or species (specifically through effects on annual rates of recruitment or survival) through any of the following methods:

- Behavioral observations in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict pertinent information, e.g., received level, distance from source);
  - Physiological measurements in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict pertinent information, e.g., received level, distance from source);
  - Distribution and/or abundance comparisons in times or areas with concentrated stimuli versus times or areas without stimuli;
4. An increased knowledge of the affected species; or
  5. An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

The Navy submitted a marine mammal monitoring plan as part of their IHA application, which can be found on the Internet at [www.nmfs.noaa.gov/pr/permits/incidental/](http://www.nmfs.noaa.gov/pr/permits/incidental/). Similar plans have been successfully implemented by the Navy under previous IHAs issued for work conducted at NBKB.

#### *Visual Marine Mammal Observations*

The Navy will collect sighting data and behavioral responses to construction for marine mammal species observed in the region of activity during the period of activity. All observers will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring. The Navy will monitor the shutdown zone and disturbance zone before, during, and after pile driving, with observers located at the best practicable vantage points. Based on our requirements, the Marine Mammal Monitoring Plan would implement the following procedures for pile driving:

- A dedicated monitoring coordinator will be on-site during all construction days.

The monitoring coordinator will oversee marine mammal observers. The monitoring coordinator will serve as the liaison between the marine mammal monitoring staff and the construction contractor to assist in the distribution of information.

- MMOs would be located at the best vantage point(s) in order to properly see the entire shutdown zone and as much of the disturbance zone as possible. A minimum of three MMOs will be on duty during all pile driving activity, with two of these monitoring the shutdown zones.

- During all observation periods, observers will use binoculars and the naked eye to search continuously for marine mammals.

- If the shutdown zones are obscured by fog or poor lighting conditions, pile driving at that location will not be initiated until that zone is visible. Should such conditions arise while impact driving is underway, the activity would be halted.

- The shutdown and disturbance zones around the pile will be monitored for the presence of marine mammals before, during, and after any pile driving or removal activity.

Individuals implementing the monitoring protocol will assess its effectiveness using an adaptive approach. Monitoring biologists will use their best professional judgment throughout implementation and seek improvements to these methods when deemed appropriate. Any modifications to protocol will be coordinated between NMFS and the Navy.

#### *Data Collection*

We require that observers use approved data forms. Among other pieces of information, the Navy will record detailed information about any implementation of shutdowns, including the

distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, the Navy will attempt to distinguish between the number of individual animals taken and the number of incidents of take. We require that, at a minimum, the following information be collected on the sighting forms:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (e.g., percent cover, visibility);
- Water conditions (e.g., sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including

bearing and direction of travel and distance from pile driving activity;

- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

### *Reporting*

A draft report will be submitted within ninety calendar days of the completion of the in-water work window. The report will include marine mammal observations pre-activity, during-activity, and post-activity during pile driving days, and will also provide descriptions of any problems encountered in deploying sound attenuating devices, any behavioral responses to construction activities by marine mammals and a complete description of all mitigation shutdowns and the results of those actions and an extrapolated total take estimate based on the

number of marine mammals observed during the course of construction. A final report must be submitted within thirty days following resolution of comments on the draft report.

### **Estimated Take by Incidental Harassment**

Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as: “...any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

All anticipated takes would be by Level B harassment resulting from vibratory and impact pile driving and involving temporary changes in behavior. The proposed mitigation and monitoring measures are expected to minimize the possibility of injurious or lethal takes such that take by Level A harassment, serious injury, or mortality is considered discountable. However, it is unlikely that injurious or lethal takes would occur even in the absence of the planned mitigation and monitoring measures. Estimated take by incidental harassment was described in detail in our notice of proposed IHA (80 FR 22477; April 22, 2015) and is summarized here.

The Navy has requested authorization for the incidental taking of small numbers of Steller sea lions, California sea lions, harbor seals, transient killer whales, and harbor porpoises in the Hood Canal that may result from pile driving during construction activities associated with the wharf maintenance project described previously in this document. In order to estimate the potential incidents of take that may occur incidental to the specified activity, we first estimated the extent of the sound field that may be produced by the activity and then considered those

estimated sound fields in combination with information about marine mammal density or abundance in the project area.

In order to determine reasonable SPLs and their associated effects on marine mammals that are likely to result from pile driving at NBKB, studies with similar properties to the specified activity were evaluated, including measurements conducted for driving of steel piles at NBKB as part of the TPP (Illingworth & Rodkin, 2012). Please see Appendix B of the Navy's application for a detailed description of the information considered in determining reasonable proxy source level values. The Navy used representative source levels (for installation of 30-in steel pipe pile) of 195 dB rms for impact driving and 166 dB rms for vibratory driving. For impact driving, 8 dB effective attenuation was assumed due to use of a bubble curtain and was therefore subtracted from the source level. Practical spreading was assumed in determining appropriate transmission loss.

We assumed that vibratory pile driving could occur on any of the eight days and that sound levels associated with vibratory removal would be conservative in relation to pile removal via pneumatic chipping. Acoustic measurements for pneumatic chipping were previously performed during maintenance work at EHW-1 in 2012, with an average value of 141 dB rms measured at 10 m (RMDT, 2013). Therefore, we do not explicitly consider pile removal (via pneumatic chipping) separately from pile installation activity.

**Table 2. Calculated distance(s) to and area encompassed by underwater marine mammal sound thresholds during pile installation**

Threshold	Distance	Area
Impact driving, pinniped injury (190 dB)	6 m	113 m <sup>2</sup>
Impact driving, cetacean injury (180 dB)	29 m	2,630 m <sup>2</sup>



Impact driving, disturbance (160 dB)	631 m	0.9 km <sup>2</sup>
Vibratory driving, pinniped injury (190 dB)	n/a	-
Vibratory driving, cetacean injury (180 dB)	n/a	-
Vibratory driving, disturbance (120 dB)	6.3 km	41.6 km <sup>2</sup>

Hood Canal does not represent open water, or free field, conditions. Therefore, sounds would attenuate as they encounter land masses or bends in the canal. As a result, the calculated distance and areas of impact for the 120-dB threshold cannot actually be attained at the project area. See Figure 6-1 of the Navy's application for a depiction of the size of areas in which each underwater sound threshold is predicted to occur at the project area due to pile driving.

For all species, the most appropriate information available was used to estimate the number of potential incidents of take. For harbor seals, this involved published literature describing harbor seal research conducted in Washington and Oregon, including counts and research specific to Hood Canal (Huber *et al.*, 2001; Jeffries *et al.*, 2003; London *et al.*, 2012). Killer whales are known from two periods of occurrence (2003 and 2005) and are not known to preferentially use any specific portion of the Hood Canal. Therefore, potential occurrence was assumed as likely maximum group size (Houghton *et al.*, in prep.) in concert with a nominal number of days present, in order to provide for small possibility that killer whales could be present. The best information available for the remaining species in Hood Canal came from surveys conducted by the Navy at the NBKB waterfront or in the vicinity of the project area (see Appendix A of the Navy's application). Density or abundance information, used in concert with the information provided in Table 2 and with an assumption of eight total days of pile driving and removal, is provided with authorized numbers of take in Table 3.

**Table 3. Number of potential incidental takes of marine mammals within various acoustic threshold zones**

Species	Density	Underwater		Percentage of stock abundance
		Level A	Level B (120 dB) <sup>1,2</sup>	
California sea lion	71 <sup>3</sup>	0	568	0.2
Steller sea lion	6 <sup>3</sup>	0	48	0.1
Harbor seal	7.93	0	2,640	74
Killer whale (transient)	n/a	0	12	4.9 <sup>4</sup>
Harbor porpoise	0.149	0	48	0.4

<sup>1</sup>The 160-dB acoustic harassment zone associated with impact pile driving would always be subsumed by the 120-dB harassment zone produced by vibratory driving. Therefore, takes are not calculated separately for the two zones.

<sup>2</sup>For species with associated density, density was multiplied by largest ZOI (i.e., 41.6 km<sup>2</sup>). The resulting value was rounded to the nearest whole number and multiplied by the days of activity. For species with abundance only, that value was multiplied directly by the days of activity. We assume for reasons described earlier that no takes would result from airborne noise.

<sup>3</sup>Figures presented are abundance numbers, not density, and are calculated as the average of average daily maximum numbers per month, and presented for the month with the highest value. Abundance numbers are rounded to the nearest whole number for take estimation.

<sup>4</sup>We assumed that a single pod of six killer whales could be present for as many as two days of the duration, and that harbor porpoise have the likely potential to be affected by project activities for as many as four days of the duration.

### *Changes from the Proposed Authorization*

In the proposed authorization, we provided an erroneous estimate of 32.4 km<sup>2</sup> for the 120-dB Level B harassment zone. That estimate has been corrected to 41.6 km<sup>2</sup>, as shown in Table 2. This change resulted in increased take estimates for the two species for which density, rather than abundance, is used. The authorized take number for harbor seals and harbor porpoise has been increased from 2,056 to 2,640 and from 40 to 48, respectively. We assessed these changes in relation to our preliminary determinations, and concluded that the increased numbers do not affect those determinations, described below.

### **Analyses and Determinations**

### *Negligible Impact Analysis*

NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival." A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, we consider other factors, such as the likely nature of any responses (e.g., intensity, duration), the context of any responses (e.g., critical reproductive time or location, migration), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

Pile driving activities associated with the wharf maintenance project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from underwater sounds generated from pile driving. Potential takes could occur if individuals of these species are present in the ensonified zone when pile driving is happening, which is likely to occur because (1) harbor seals, which are frequently observed along the NBKB waterfront, are present within the WRA; (2) sea lions, which are less frequently observed, transit the WRA en route to haul-outs to the south at Delta Pier; or (3) cetaceans or pinnipeds transit the larger Level B harassment zone outside of the WRA.

No injury, serious injury, or mortality is anticipated given the methods of installation and measures designed to minimize the possibility of injury to marine mammals. The potential for

these outcomes is minimized through the construction method and duration and the implementation of the planned mitigation measures. Specifically, vibratory hammers will be the primary method of installation, and this activity does not have significant potential to cause injury to marine mammals due to the relatively low source levels produced (less than 180 dB rms) and the lack of potentially injurious source characteristics. Impact pile driving produces short, sharp pulses with higher peak levels and much sharper rise time to reach those peaks. The entire duration of the specified activity would be eight days; given the intensity of potential effects as described below, we do not expect that such a short duration could produce a greater than negligible impact on the affected stocks.

When impact driving is necessary, required measures (use of a sound attenuation system, which reduces overall source levels as well as dampening the sharp, potentially injurious peaks, and implementation of shutdown zones) significantly reduce any possibility of injury. Given sufficient “notice” through use of soft start, marine mammals are expected to move away from a sound source that is annoying prior to its becoming potentially injurious. The likelihood that marine mammal detection ability by trained observers is high under the environmental conditions described for Hood Canal further enables the implementation of shutdowns to avoid injury, serious injury, or mortality.

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from past projects at NBKB, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. In response to vibratory driving,

harbor seals (which may be somewhat habituated to human activity along the NBKB waterfront) have been observed to orient towards and sometimes move towards the sound. Repeated exposures of individuals to levels of sound that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Thus, even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in fitness to those individuals, and thus would not result in any adverse impact to the stock as a whole. Level B harassment will be reduced to the level of least practicable impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the project area while the activity is occurring.

For pinnipeds, no rookeries are present in the project area, there are no haul-outs other than those provided opportunistically by man-made objects, and the project area is not known to provide foraging habitat of any special importance. No cetaceans are expected within the WRA. The pile driving activities analyzed here are similar to other nearby construction activities within the Hood Canal, including recent projects conducted by the Navy at the same location as well as work conducted in 2005 for the Hood Canal Bridge (SR-104) by the Washington State Department of Transportation, which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment.

In summary, this negligible impact analysis is founded on the following factors: (1) the possibility of injury, serious injury, or mortality may reasonably be considered discountable; (2) the anticipated incidences of Level B harassment consist of, at worst, temporary (maximum of eight days) modifications in behavior; (3) the absence of any major rookeries and only a few isolated and opportunistic haul-out areas near or adjacent to the project site; (4) the absence of

cetaceans within the WRA and generally sporadic occurrence outside the WRA; (5) the absence of any other known areas or features of special significance for foraging or reproduction within the project area; and (6) the presumed efficacy of the planned mitigation measures in reducing the effects of the specified activity to the level of least practicable impact. In addition, none of these stocks are listed under the ESA or designated as depleted under the MMPA. All of the stocks for which take is authorized are thought to be increasing or to be within OSP size. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, including those conducted at the same time of year and in the same location, demonstrate that the potential effects of the specified activity will have only short-term effects on individuals. The specified activity is not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, we find that the total marine mammal take from Navy's wharf maintenance activities will have a negligible impact on the affected marine mammal species or stocks.

#### *Small Numbers Analysis*

The numbers of animals authorized to be taken for all stocks (other than harbor seals) would be considered small relative to the relevant stocks or populations (ranging from 0.1 to 4.9 percent) even if each estimated taking occurred to a new individual – an extremely unlikely scenario. For pinnipeds occurring at the NBKB waterfront, there will almost certainly be some overlap in individuals present day-to-day. Further, for the pinniped species, these takes could potentially occur only within some small portion of the overall regional stock. For example, of the estimated 296,750 California sea lions, only certain adult and subadult males – believed to

number approximately 3,000-5,000 by Jeffries *et al.* (2000) – travel north during the non-breeding season. That number has almost certainly increased with the population of California sea lions – the 2000 SAR for California sea lions reported an estimated population size of 204,000-214,000 animals – but likely remains a relatively small portion of the overall population.

For harbor seals, takes are likely to occur only within some portion of the population, rather than to animals from the Hood Canal stock as a whole. As described previously (see “Description of Marine Mammals in the Area of the Specified Activity” in our notice of proposed authorization), established harbor seal haul-outs are located at such a distance from the project site that we would not expect the majority of individual animals comprising the total stock to occur within the affected area, especially over such a short duration (eight days maximum). Therefore, we expect that the authorized take level represents repeated exposures of a much smaller number of individuals in relation to the total stock size. Further, animals that are resident to Hood Canal, to which any incidental take would accrue, represent only seven percent of the best estimate of the larger Washington inland waters harbor seal abundance.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, we find that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

#### **Impact on Availability of Affected Species for Taking for Subsistence Uses**

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, we have determined that the total taking of affected species or stocks would not have

an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

### **Endangered Species Act (ESA)**

No marine mammal species listed under the ESA are expected to be affected by these activities. Therefore, we have determined that a section 7 consultation under the ESA is not required.

### **National Environmental Policy Act (NEPA)**

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500-1508), the Navy prepared an Environmental Assessment (EA) to consider the direct, indirect and cumulative effects to the human environment resulting from the wharf maintenance project. NMFS made the Navy's EA available to the public for review and comment, in relation to its suitability for adoption by NMFS in order to assess the impacts to the human environment of issuance of an IHA to the Navy. Also in compliance with NEPA and the CEQ regulations, as well as NOAA Administrative Order 216-6, NMFS has reviewed the Navy's EA, determined it to be sufficient, and adopted that EA and signed a Finding of No Significant Impact (FONSI) on June 8, 2015. The Navy's EA and NMFS' FONSI for this action may be found on the Internet at [www.nmfs.noaa.gov/pr/permits/incidental/construction.htm](http://www.nmfs.noaa.gov/pr/permits/incidental/construction.htm).



**Authorization**

As a result of these determinations, we have issued an IHA to the Navy for the described wharf maintenance activities in the Hood Canal, from July 16, 2015 through January 15, 2016, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: June 22, 2015.

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Donna S. Wieting,

Director,

Office of Protected Resources,

National Marine Fisheries Service.

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